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BIOLOGICAL EVALUATION OF A SAWFLY INFESTATION

ON THE

FISHLAKE NATIONAL FOREST, 1970

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On October 14, 1970, Entomologist William Klein, accompanied by Ranger L. Glen Quigley, examined some defoliated ponderosa pine near the head of Clear Creek, Kanosh Ranger District, Fishlake National Forest (see appended map).

The ponderosa pine stand is small, containing no more than 50 trees, relatively isolated, and occurs in a narrow band, perhaps one-quarter mile long, along the south bank of Clear Creek. Individual trees vary in height from 10 to 60 feet. The widely separated pines are interspersed with cottonwood and various brush species. Defoliation was first noticed late in the summer by Ranger Quigley who promptly submitted a Forest Pest Detection Report.

The defoliation was caused by a sawfly, tentatively determined as Neodiprion sp. Defoliation of individual trees ranged from light to very heavy; the larger trees appeared to suffer the heaviest damage (Figures 1-3). At the time of examination, no larvae or their remains were present. A search of the ground litter and duff revealed some empty pupae cases, some of which had been parasitized. Several branches were removed with pole pruners from near the mid-crowns of three mature ponderosa pines situated near the center and at both ends of the infestation, and examined very superficially for evidence of a life stage. Eggs were relatively abundant in all samples examined. The branches were marked as to location, and brought into the laboratory in Ogden for closer analysis. Here they were systematically examined for relative abundance of eggs and classified as to incidence of defoliation. As an adjunct, information was obtained on the spacing, distribution, and number of eggs per individual needle. This information is summarized below.

Tree	Length of Foliage Examined	1,000 linear inches		Needles Defoliated	Eggs/needle	Eggs/cm.
		Infested needles	eggs			
	(inches)	(number)	(number)	(percent)	(number)	(number)
1 (West)	3,582	6.4	116.4	56	18.1	3.2
2 (Mid.)	2,991	12.7	280.8	42	22.1	3.0
3 (East)	3,700	1.6	38.6	0	23.8	3.0

Although there is little evidence at this stage, we suspect that the life cycle of this insect is as follows: Eggs are deposited inside the needles in the fall where they remain until spring. Coincident with the first flush of growth, the eggs hatch and the newly emerged larvae begin to feed.

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At first they prefer the new, succulent growth, but after that is depleted, they move back on the branch and consume older needles. Gregariousness is a common characteristic of sawfly larvae. The larval stage terminates in late June or early July, at which time they drop or crawl beneath the litter where they pupate. Emergence, mating, and oviposition takes place in the fall (a few pupae will remain in diapause for one or more years). Most stages of sawflys are attacked by parasites and predators.

A single, live, female adult was found on the foliage during the laboratory examination. It was prepared and mailed to the National Museum for positive identification. At this time the determination has not been received.

It appears from the available data that egg deposition is relatively heavy, and unless natural control factors intervene this winter and spring, larvae will be abundant in 1971. Defoliation will be the same or possibly exceed the 1970 level. Some top and branch kill may occur. There is no known, approved control method for this insect. Some chemical insecticides are very effective against sawflys in general, but even if they were available and approved, the contiguity of the infestation to Clear Creek precludes their use.

Sawfly populations, generally, are very cyclic--many last three years at the most. Reductions are usually due to depletion of food and a rapid buildup of parasites and predators.

A followup survey will be made in the spring to check on overwintering survival. Additional biological information will be collected during the course of the infestation in the summer and fall.

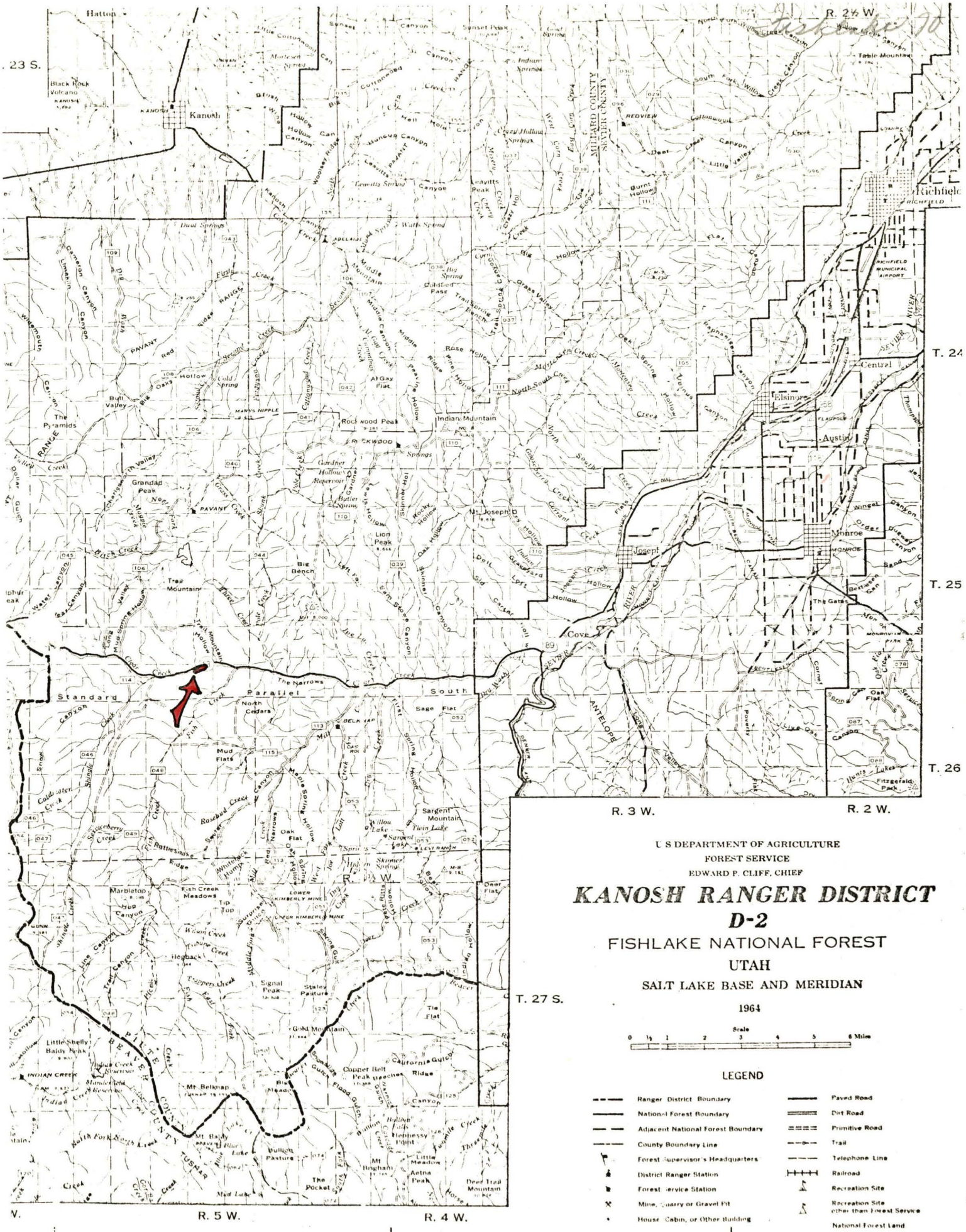

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Figure 1. Stereograms of ponderosa pines defoliated by a sawfly, Neodiorion sp. Clear Creek in foreground of bottom stereogram.

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Figure 2. Ponderosa pine defoliated by a sawfly, Neodiprion sp.